

# **Clean Renewable Energy Bonds (CREB) Projects**

## **Upcoming Contract Opportunities**

September 2009

# Introductions

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CREB Projects, DES Single Point of Contact

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Coordinator, District Small Business Liaison

# Project Website

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[www.dot.ca.gov/hq/esc/sdsee/creb/](http://www.dot.ca.gov/hq/esc/sdsee/creb/)

# Presentation Overview

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- **Project Summary**
- **Project Specifications**
- **Contracts Over \$147,000**
- **Contracts Under \$147,000**
- **Insurance Requirements**
- **How to do Business with Caltrans**
- **Questions**



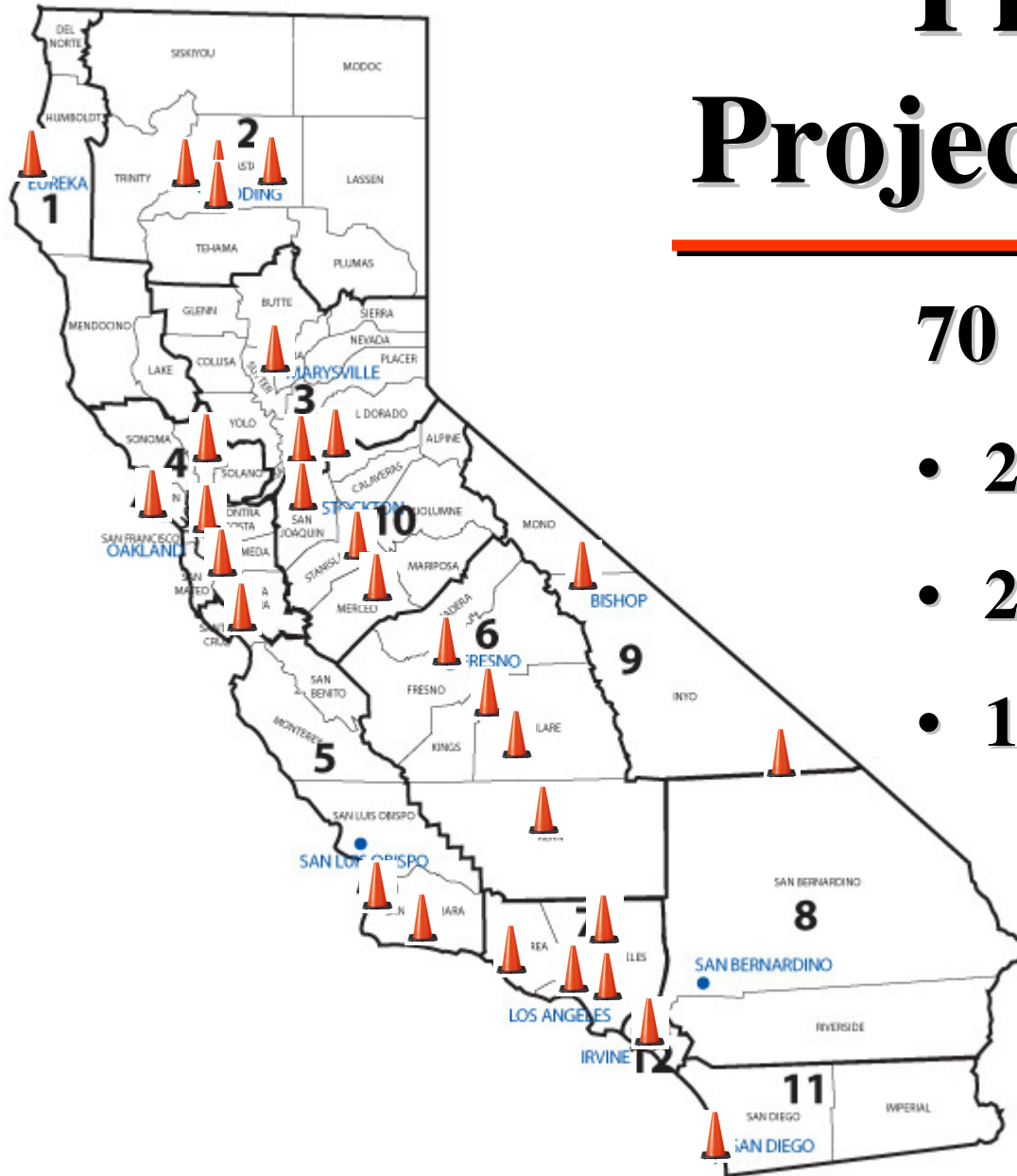


# Project Summary

**Steve Schoff, P.E.**

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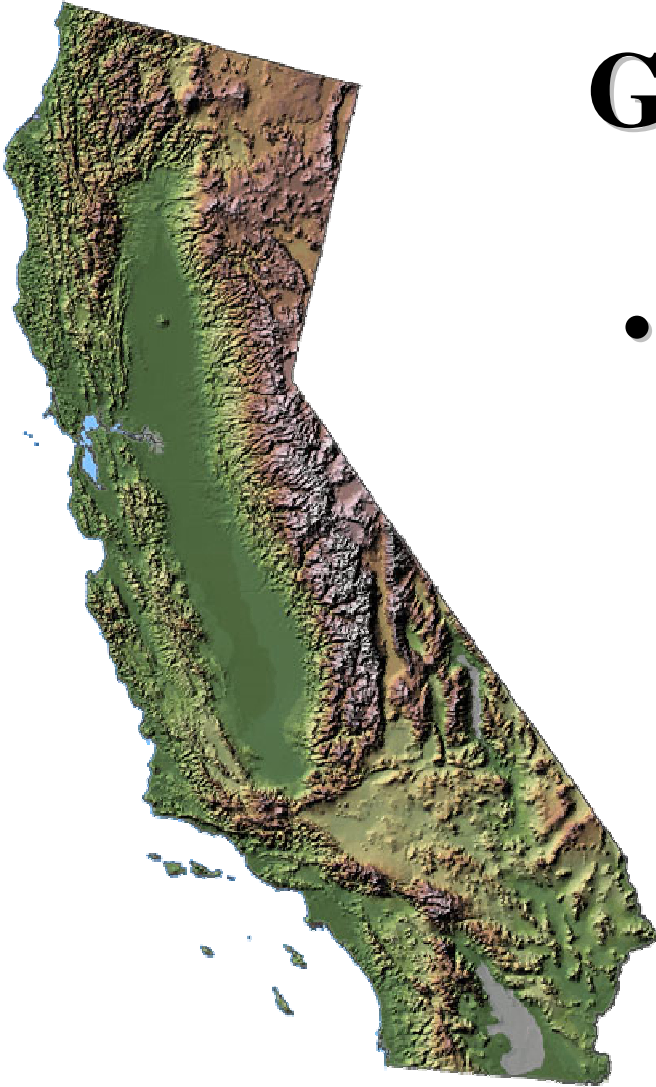
- **22 Small Projects**
- **22 Large Projects**
- **1 Major Project**



ORIGINAL CREB (Clean Renewable Energy Bond) Project List**														
Dist	Lead Unit	Project	Address	City	Est PV Project Scope KW AC	Rough Cost x 1000		Dist	Lead Unit	Project	Address	City	Est PV Project Scope KW AC	Rough Cost x 1000
01	Facilities	1. District 1 Office Bldg.	1656 Union St.	Eureka, CA	91.50	\$791		06	Facilities	6. District 6 Office Bldg.	1352 West Olive St.	Fresno, CA	89.25	\$771
01	Maintenance	Bracut Maintenance Station	6100 Highway 101 North	Eureka, CA	60.00	\$519		06	Div. Equipt	24. Equipment Building #12 (2602)	1200 Olive Avenue	Bakersfield, CA	42.00	\$363
01	Div. Equipt	13. Equipment Building #1 (2101)	1650 Albee Street	Eureka, CA	37.50	\$324		06	Div. Equipt	23. Equipment Building #11 (2601)	1385 North West Avenue	Fresno, CA	35.25	\$305
01	Maintenance	47. District 1 - Maint. Facility 1	1835 6th Street	Eureka, CA	25.00	\$216		06	Maintenance	97. District 6 - Maint. Facility 4	700 East Murray	Visalia, CA	25.00	\$216
01	Maintenance	49. District 1 - Maint. Facility 3	90 W. Lake Mendocino Drive	Ukiah, CA	25.00	\$216		06	Maintenance	96. District 6 - Maint. Facility 3	1635 W. Pine Avenue	Fresno, CA	22.00	\$190
					239.00	\$2,066		06	Maintenance	95. District 6 - Maint. Facility 2	805 South Lexington	Delano, CA	15.00	\$130
02	Maintenance	Burney Maintenance Station	37334 Main Street	Burney, CA	20.00	\$173		06	Maintenance	Lebec Maintenance Station	36282 Golden State Highway	Lebec, CA	10.00	\$86
02	SRRA	Herbert Miles SRRA	Route 5, PM 34.7	Tehema County, CA	9.00	\$78		06	Maintenance	Porterville Maintenance Station	1331 South Second Street	Porterville, CA	10.00	\$86
02	Maintenance	Weaverville Maintenance Station	203 Memorial Avenue	Weaverville, CA	8.00	\$69		06	SRRA	Phillip Raine SRRA	About 4.0 Miles North Of Route 190 At Tipton	Tulare County	10.00	\$86
					37.00	\$320							258.50	\$2,234
03	Div. Equipt	10. Division of Equipment Bldg.	1805 34th St.	Sacramento, CA	153.00	\$1,322		07	Labs	36. M&R Laboratory #5	1615 Wall Street	Los Angeles, CA	42.75	\$369
03	Labs	11. Main Lab Bldg (Translab)	5900 Folsom Blvd.	Sacramento, CA	153.00	\$1,322		07	Maintenance	101. District 7 - Maint. Facility 3	7300 East Bandini Blvd.	Commerce, CA	36.75	\$318
03	Div. Equipt	17. Equipment Building #5 (2301)	981 North Beale Road	Marysville, CA	90.00	\$778		07	Maintenance	Newhall Maintenance Station	28820 North The Old Road	Valencia, CA	36.00	\$311
03	Maintenance	Sunrise Maintenance Station	11325 Sanders Drive	Rancho Cordova, CA	30.00	\$259		07	Maintenance	100. District 7 - Maint. Facility 2	4821 Adohr Lane	Camarillo, CA	30.00	\$259
03	Maintenance	55. District 3 - Maint. Facility 2	2535 Notre Dame Blvd.	Chico, CA	25.00	\$216		07	Maintenance	99. District 7 - Maint. Facility 1	2122 N. Windsor	Altadena, CA	25.00	\$216
03	Maintenance	54. District 3 - Maint. Facility 1	1050 Grass Valley Hwy.	Auburn, CA	15.00	\$130		07	Div. Equipt	26. Equipment Building #14 (2702)	7301 E. Slauson Avenue	Commerce, CA	25.00	\$216
03	Maintenance	Elk Grove Maintenance Station	9087 Elkmont Way	Elk Grove, CA	10.00	\$86		07	Maintenance	103. District 7 - Maint. Facility 5	850 E. Huntington Drive	Monrovia, CA	20.00	\$173
03	SRRA	Willows SRRA	8 km North Of Willows	Glenn County	3.75	\$32		07	Maintenance	Chilao Maintenance Station	Star Route	La Canada, CA	12.00	\$104
					479.75	\$4,146		07	Maintenance	108. District 7 - Maint. Facility 10	5660 Reseda Blvd.	Tarzana, CA	10.00	\$86
04	Div. Equipt	19. Equipment Building #7 (2401)	1993 Marina Blvd.	San Leandro, CA	45.00	\$389							237.50	\$2,053
04	Maintenance	68. District 4 - Maint. Facility 1	100 Industrial Way	Benicia, CA	30.00	\$259		08	Div. Equipt	27. Equipment Building #15 (2802)	1800 Dill Road	Barstow, CA	25.00	\$216
04	Maintenance	69. District 4 - Maint. Facility 2	Carquinez Toll Plaza	Crockett, CA	30.00	\$259		09	Facilities	7. District 9 Office Building	500 S. Main St.	Bishop, CA	90.75	\$784
04	Maintenance	82. District 4 - Maint. Facility 15	600 Lewelling Blvd.	San Leandro, CA	30.00	\$259		09	Maintenance	111. District 9 - Maint. Facility 1	1250 Spruce Street	Bishop, CA	35.00	\$302
04	Maintenance	74. District 4 - Maint. Facility 7	55000 West Jackson St.	Hayward, CA	23.25	\$201		09	Maintenance	Shoshone Maintenance Station	Junction Of Routes 127 And 178	Shoshone, CA	15.00	\$130
04	Maintenance	South San Jose Maintenance Station	45736 Monterey Road	San Jose, CA	20.00	\$173							140.75	\$1,216
04	Maintenance	86. District 4 - Maint. Facility 19	2616 N. Main Street	Walnut Creek, CA	20.00	\$173		10	Maintenance	Shop 10	1603 South B Street	Stockton, CA	40.00	\$346
04	Maintenance	70. District 4 - Maint. Facility 3	10130 Bubb Road	Cupertino, CA	15.00	\$130		10	Maintenance	Stockton Maintenance Station	1604 South B Street	Stockton, CA	25.00	\$216
04	Maintenance	84. District 4 - Maint. Facility 17	195 Capitola Road Extension	Santa Cruz, CA	15.00	\$130		10	SRRA	Westley SRRA	About 1.126 km South of County Line	Stanislaus County	17.00	\$147
04	Maintenance	75. District 4 - Maint. Facility 8	1369 Willow Avenue	Hercules, CA	12.00	\$104		10	SRRA	Enoch Christoffersen SRRA	About 3.7 km South Of Turlock	Turlock, CA		

# Project Summary

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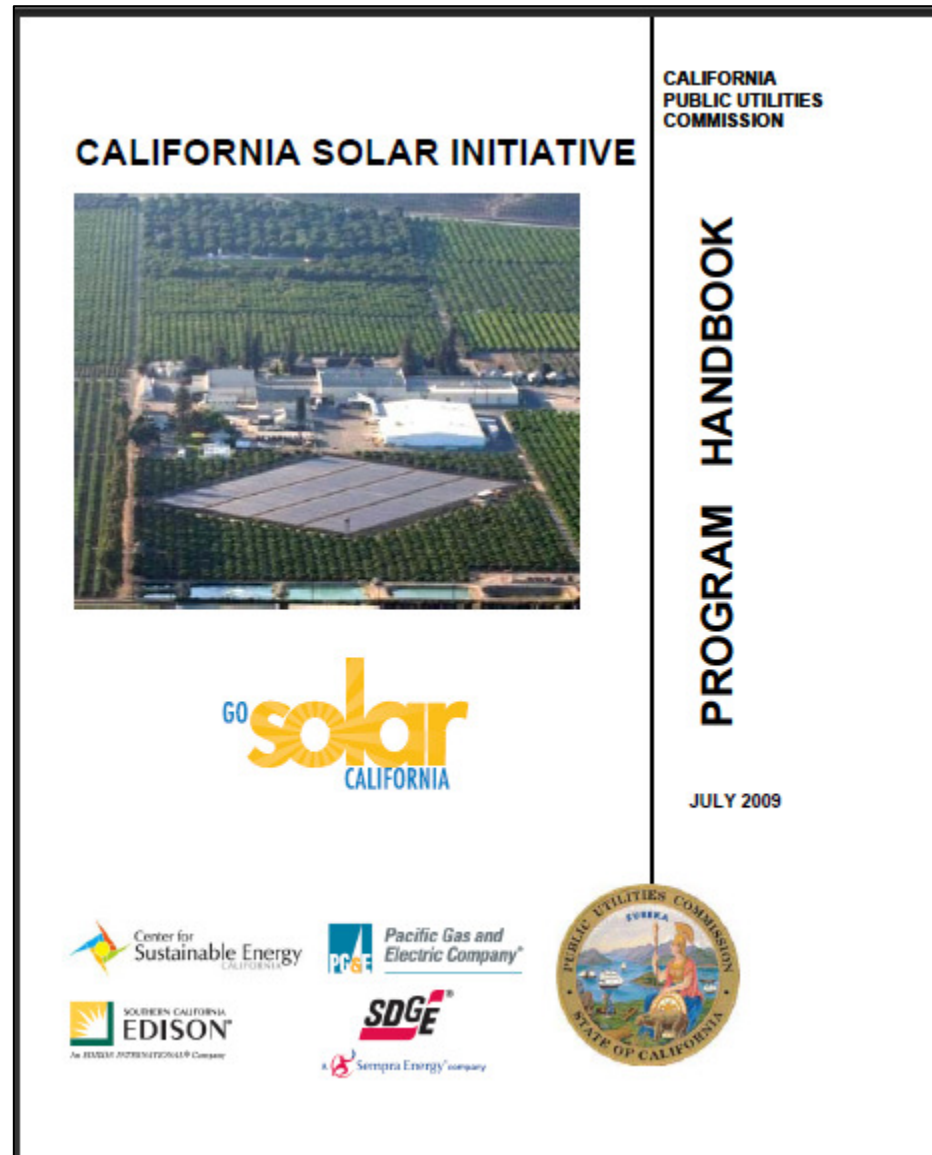


## General Requirements

- **Conformance with the California Solar Initiative (CSI) Program**

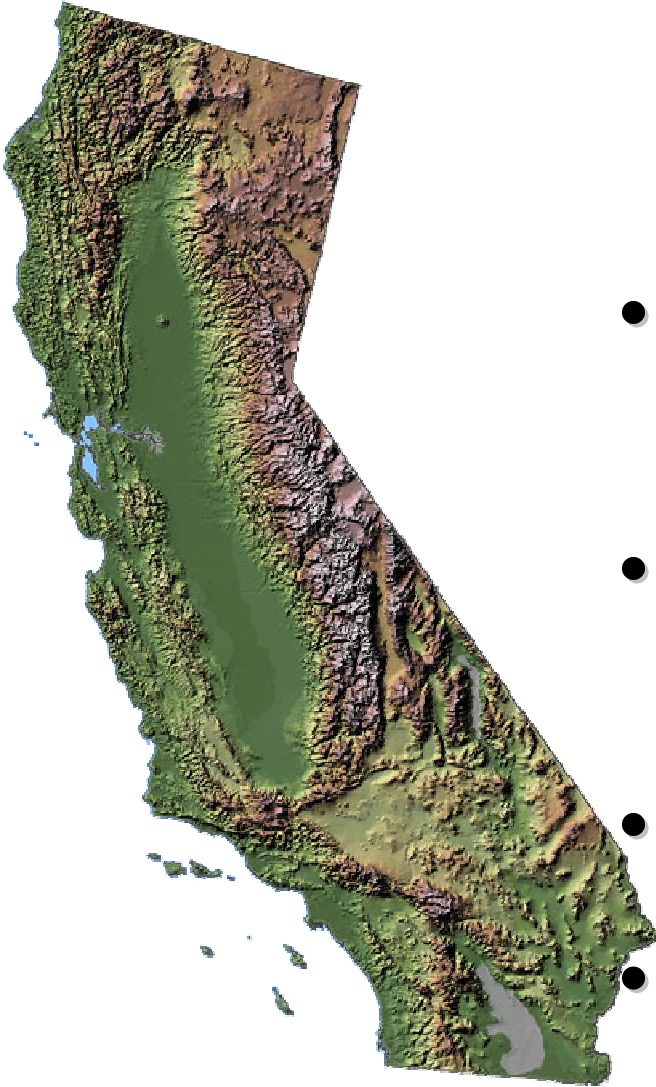
<http://www.gosolarcalifornia.org/csi/index.html>

# Project Summary



# Project Summary

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## License Requirements

- A (General Engineering Contractor), **or**
- B (General Building Contractor), **or**
- C-10 (Electrical Contractor), **or**
- C-46 (Solar Contractor)



# Typical Contract Plans

**STATE OF CALIFORNIA**  
**DEPARTMENT OF TRANSPORTATION**

**PROJECT PLANS FOR BUILDING CONSTRUCTION**  
**IN XXXX COUNTY**  
**IN YYYY CITY**  
**AT THE ZZZZ MAINTENANCE STATION**  
**ADDRESS OF FACILITY**

**LOCATION MAP**

**LOCATION OF CONSTRUCTION**  
**XX MAINTENANCE STATION**

The Contractor shall possess the Class (or classes) of license as specified in the "Notice to Contractors".

**NO SCALE**

Contract No. **XX-XXXXXX**

**Contract No. XX-XXXXXX**

# Typical Contract Plans

## ABBREVIATIONS

A	PHASE
AL	AMPERE
AC	ALTERNATING CURRENT
AH	AMPERES - HOUR
AL	ALUMINUM
BC	BATTERY CHARGER
BLOC	BUILDING
C	CONDUIT
CB	CIRCUIT BREAKER
CKT	CIRCUIT
DC	DIRECT CURRENT
DP	DUPLEX RECEPTACLE
EX	EXISTING
EO	ELECTRICALLY OPERATED
G	GROUND
JEN	JUNCTION BOX
KW	KILOWATT
MC	METALLIC CONDUIT
MDP	MAIN DISTRIBUTION PANEL
MIN	MINIMUM
MT	EMPTY CONDUIT
NEW	NEW
P	POLE
PB	PULL BOX
PTC	PV USA TEST CONDITIONS
PV	PHOTOVOLTAIC
STC	STANDARD TEST CONDITIONS
TYP	TYPICAL
V	VOLTS

## LEGEND

	CONDUIT EXPOSED
	CONDUIT, METALLIC UNDERGROUND
	CONDUIT, POLYVINYL CHLORIDE UNDERGROUND
	CONDUIT, FLEXIBLE
	CONDUIT, TURN UP
	CONDUIT, TURN DOWN
	CIRCUIT BREAKER
	GROUNDING ELECTRODE
	ENCLOSURE BOND
	ADAPTER, ONE TYPE CONDUIT TO ANOTHER
	EXISTING JUNCTION BOX
	EXISTING UNDERGROUND CONDUIT AND CONDUCTORS - REMOVE
	EXISTING CONDUIT AND CONDUCTORS TO REMAIN UNLESS OTHERWISE NOTED
	SECTION/ELEVATION LETTER
	SHEET NUMBER
	DETAIL NUMBER
	SHEET NUMBER

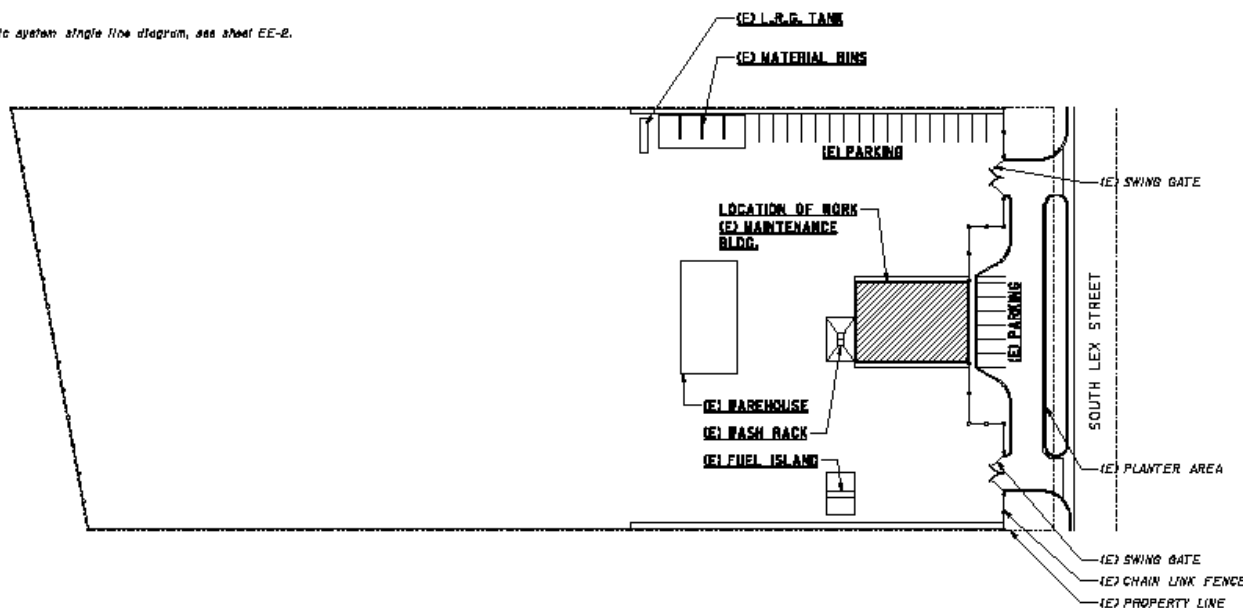
## General Notes

- The Contractor shall verify true north prior to installation of PV system.
- All AC/DC feeder conductors and equipment grounding conductors shall be sized to meet or exceed the following:
  - Total net voltage drop of the PV electrical power generation system from PV source to the existing Panel M shall not exceed 2%.
  - Upon occurrence of any kind of fault at any point in the system, over current protective devices shall trip within 1/2 cycle.
- Not all electrical/mechanical equipment and conduit systems are shown.
- Location of all existing equipment and conduit systems as shown are approximate only. Contractor shall verify the exact location of all equipment and conduit systems in the field where required.
- Sawcut existing paved surfaces at places where required for installation of underground conduit system and repair disturbed surfaces to match existing.
- For photovoltaic system single line diagram, see sheet EE-2.

## INDEX OF SHEETS

SHEET NO.	DESCRIPTION
GP	GENERAL PLAN AND LEGEND
<b>ELECTRICAL</b>	
EE-1	NOT USED
EE-2	SINGLE LINE DIAGRAM
EE-3	ROOF PLAN
EE-4	PARTIAL PLAN AND ELEVATION
EE-5	ELEVATION AND DETAILS

DIST.	COUNTY	ROUTE	ELONGMENT POST TO TAIL PRESENT	SHEET NO.	TOTAL SHEETS
				00-00-00	
REVISIONS			DATE		
PLANS APPROVAL DATE					
The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electrical copies of this plan sheet.					



## SITE PLAN

SCALE 1" = 40'-0"

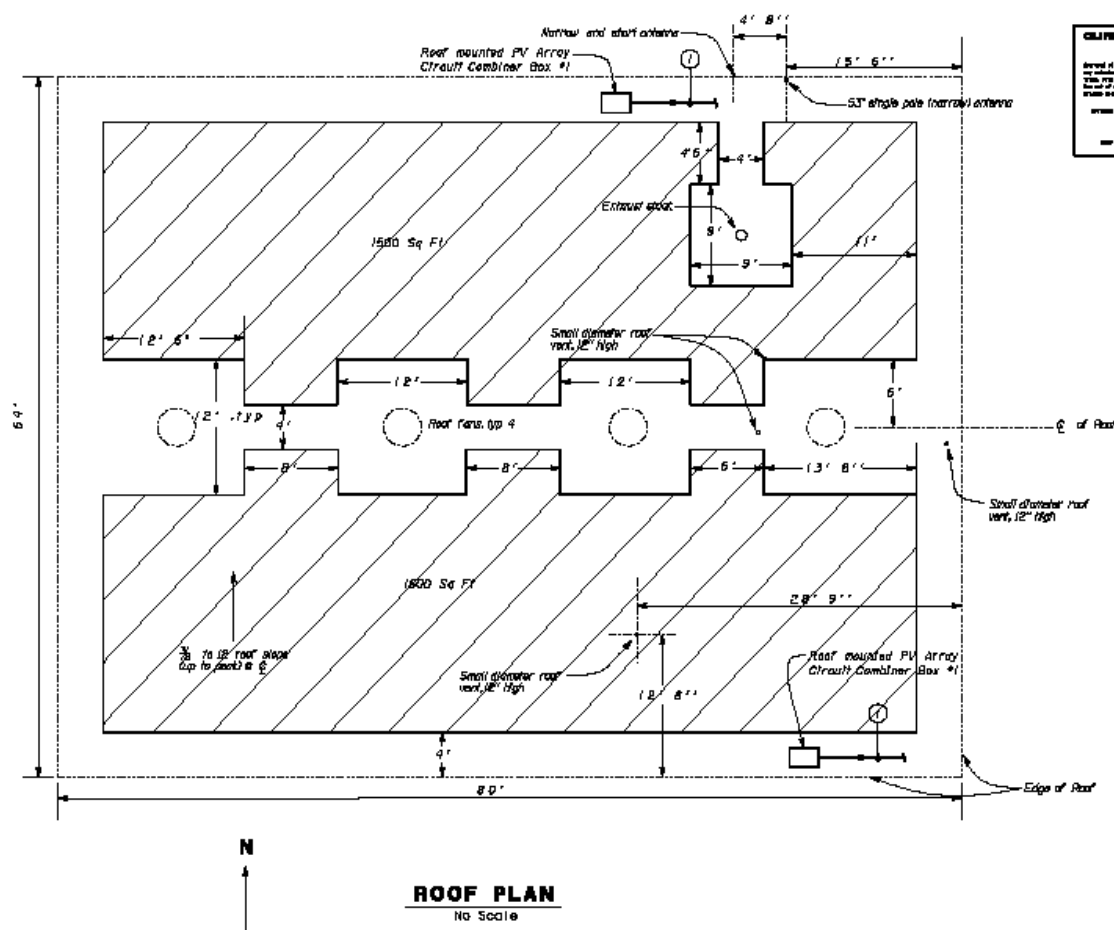
THIS DRAWING ACCURATE FOR ELECTRICAL WORK ONLY.

DESIGN SUPERVISOR	DESIGN	BY	DATE	STATE OF CALIFORNIA	DEPARTMENT OF TRANSPORTATION	SECTION OF ENGINEERING SERVICES	ELECTRICAL-MECHANICAL-WATER	WASTEWATER DESIGN	PROJECT NO.	XX MAINTENANCE STATION	PHOTOVOLTAIC SYSTEM	SHEET	
	DETAILS	BY	DATE						FOR POST			GP	
DESIGN CHECKER	QUANTITIES	BY	DATE										
DR 000 0000 0000	FILE NO.	FILE NO.	DATE PLOTTED	02-SEP-2008	TIME PLOTTED	10:10:13	ORIGINAL SCALE	10 MILLIMETERS	FOR REDUCED PLANS	CU 00	EA XXXXXX	REVISION DATE	REVISION DATE

# Typical Contract Plans

Photovoltaic Module		Utility Interactive System		Photovoltaic System Requirements	
<p>PV modules shall be polycrystalline silicon cell type module, with interconnection connectors rated for 30°C. PV modules shall be UL 1703 listed, with a maximum system voltage of 600 VDC. PV module manufacturer shall be one of those manufacturers listed as an eligible California Solar Initiative (CSI) PV module manufacturer.</p>		<p>Utility Interactive system shall be outdoor type, factory assembled system consisting of the following equipment:</p> <ul style="list-style-type: none"> <li>- NEHA 3R enclosure.</li> <li>- 15 kW/15 kVA, 480/277 V, 3-phase, 4-wire, at a power factor of 0.99 or greater.</li> <li>- Fused sub-array combiner, with minimum of 4 array inputs for positive DC, negative DC, and DC ground bus bars. Positive array inputs fuse size to match loading.</li> <li>- Built-in DC and AC disconnect switches, also to match loading.</li> <li>- Integrated 15 kVA, 480/277 V, 3-phase, 4-wire, output isolation type transformer.</li> <li>- Ground fault protection.</li> <li>- Integrated AC and DC surge protections.</li> <li>- Integrated AC and DC contactors.</li> <li>- Pre-charge circuit.</li> <li>- Human Machine Interface (HMI). AC/DC Inverter's HMI shall be equipped with LCD and keypad displaying real time. HMI main menu shall display system monitoring, status and faults, and operation. Monitoring menu shall display system status, metering, daily, weekly and monthly energy production. Status and faults menu shall display status messages, system output, and number of faults. Operation menu shall display control and settings.</li> <li>- Local and remote monitoring systems capabilities.</li> <li>- AC ground bus bars.</li> </ul> <p>Enclosure shall be NEHA 3R, 14-gauge, and powder-coated standard factory finish steel enclosure. All screws, latches, hinge pins and similar hardware shall be stainless steel. HMI, AC and DC disconnect switches and equipment rating labels shall be mounted on the exterior door. Exterior door shall have interlock switch and be lockable with a padlock. The cabinet shall have REVIJ rated filtered, fan entry forced air cooling system with one fan, sloped roof, and shall be suitable for seismic zone 4 compliance.</p> <p>DC/AC Inverter shall be rated at maximum continuous output power of 15 kW (15 kVA), with input operating voltage range between 305 to 600 VDC, and maximum DC input current shall be 104 A. Inverter shall be capable of operating at ambient temperature range (Full power) of -4°F to +122°F. DC/AC Inverter manufacturer shall be one of those manufacturers listed as an eligible California Solar Initiative (CSI) DC/AC Inverter manufacturer.</p>		<p>Photovoltaic system complete design and installation details, inclusive of all Engineering calculations signed by an Professional Engineer of the respective field (both Electrical and Civil Engineering) in the State of California, shall be submitted for approval by the Contractor. The PV design shall meet or exceed the following requirements:</p> <ol style="list-style-type: none"> <li>1) Total designed capacity of photovoltaic system at existing Storage Bins building shall be 15 kW DC/AC rating. Number of PV modules per string shall be arranged in a manner to meet or exceed the following: <ul style="list-style-type: none"> <li>- Maximum system voltage based on lowest expected ambient temperature at the site (V<sub>oc</sub> maximum on coldest day) shall be no less than 1% of the inverter's maximum input DC voltage range.</li> <li>- Maximum system power voltage, based on highest continuous ambient temperature at the site (V<sub>mp</sub> on warmest day), shall be 80% greater than the inverter's minimum input DC voltage range.</li> </ul> </li> <li>2) Photovoltaic system module row spacing shall be designed to prevent shading from adjacent module.</li> <li>3) All wiring, except of module interconnection, shall be concealed inside conduit system.</li> <li>4) Photovoltaic system module structural support system shall be designed to withstand wind forces of 85-mph per hour.</li> <li>5) Photovoltaic system wiring and protective devices shall meet or exceed the requirements of all applicable codes.</li> <li>6) PV Array Circuit Combiner Boxes locations as shown are arbitrary only. Contractor shall install the combiner boxes at locations that best suit the photovoltaic system strings layout.</li> </ol>	
<p>PV array circuit combiner box shall be factory assembled, 600 VDC rated combiner box, with fused input circuits, two isolated DC bus bars, ground bus bar, all enclosed inside NEHA 3R lockable hinged cover enclosure. The combiner box shall be UL 1741 listed.</p> <p>PV array circuit combiner box shall have the following components:</p> <ul style="list-style-type: none"> <li>- DIN rail mounted fuses with holders with fuses.</li> <li>- Positive DC bus bar, negative DC bus bar and ground bus bar.</li> <li>- DIN rail mounted Grid-Tie surge arrester. The surge arrester shall be rated to withstand 15 kA (8/20 micro second) induced transient surge type, and compatible to use with grounded PV arrays.</li> </ul>		<p>DC/AC Inverter shall be rated at maximum continuous output power of 15 kW (15 kVA), with input operating voltage range between 305 to 600 VDC, and maximum DC input current shall be 104 A. Inverter shall be capable of operating at ambient temperature range (Full power) of -4°F to +122°F. DC/AC Inverter manufacturer shall be one of those manufacturers listed as an eligible California Solar Initiative (CSI) DC/AC Inverter manufacturer.</p>		<p>General Notes:</p> <ol style="list-style-type: none"> <li>A. Provide and install all necessary warning labels/markings, per Article 690 of California Electrical Code (CEC), and the State Fire Marshal's guidelines for solar PV installation.</li> <li>B. Solar PV installation shall comply with the latest guideline from California Department of Forestry &amp; Fire Protection, Office of the State Fire Marshal and latest Program Handbook from California Solar Initiative (CSI).</li> </ol>	
<p><b>Photovoltaic Array Circuit Combiner Box</b></p> <p>A string of photovoltaic modules in series (1Typ)</p> <p>Photovoltaic module (1Typ)</p> <p>Strings</p> <p>Grounding lug (1Typ)</p> <p>+DC bus</p> <p>-DC bus</p> <p>Ground bus</p> <p>PV Array Circuit Combiner Box #1</p> <p>Equipment grounding conductor (1Typ)</p> <p>Photovoltaic modules of existing Storage Bins</p> <p>PV Array Circuit Combiner Box #2</p>		<p><b>Utility Interactive System</b></p> <p>Fused Sub-Array Combiner</p> <p>DC disconnect switch</p> <p>DC/AC Inverter</p> <p>15 kVA isolation transformer</p> <p>AC disconnect switch</p> <p>Surge protection (1Typ)</p> <p>Control System for Remote and Local Data Monitoring</p> <p>Ground fault protection</p> <p>Utility Interactive System</p> <p>To Utility service</p> <p>(E) Main Switchboard 208/120 V, 3-phase, 4-wire</p>		<p><b>Photovoltaic System Requirements</b></p> <p>Photovoltaic system complete design and installation details, inclusive of all Engineering calculations signed by an Professional Engineer of the respective field (both Electrical and Civil Engineering) in the State of California, shall be submitted for approval by the Contractor. The PV design shall meet or exceed the following requirements:</p> <ol style="list-style-type: none"> <li>1) Total designed capacity of photovoltaic system at existing Storage Bins building shall be 15 kW DC/AC rating. Number of PV modules per string shall be arranged in a manner to meet or exceed the following: <ul style="list-style-type: none"> <li>- Maximum system voltage based on lowest expected ambient temperature at the site (V<sub>oc</sub> maximum on coldest day) shall be no less than 1% of the inverter's maximum input DC voltage range.</li> <li>- Maximum system power voltage, based on highest continuous ambient temperature at the site (V<sub>mp</sub> on warmest day), shall be 80% greater than the inverter's minimum input DC voltage range.</li> </ul> </li> <li>2) Photovoltaic system module row spacing shall be designed to prevent shading from adjacent module.</li> <li>3) All wiring, except of module interconnection, shall be concealed inside conduit system.</li> <li>4) Photovoltaic system module structural support system shall be designed to withstand wind forces of 85-mph per hour.</li> <li>5) Photovoltaic system wiring and protective devices shall meet or exceed the requirements of all applicable codes.</li> <li>6) PV Array Circuit Combiner Boxes locations as shown are arbitrary only. Contractor shall install the combiner boxes at locations that best suit the photovoltaic system strings layout.</li> </ol>	
<p><b>PRELIMINARY PLANS</b></p> <p>DESIGN: [ ]  DETAILS: [ ]  QUANTITY: [ ]</p> <p>ORIGINAL SCALE: 1/8" = 1'-0"  FOR REVISION: [ ]</p>		<p><b>STATE OF CALIFORNIA</b>  DEPARTMENT OF INVESTIGATION</p> <p>SECTION OF ENGINEERING SERVICES  ELECTRICAL-MECHANICAL-WATER  AND WASTEWATER DESIGN</p> <p>DATE: [ ]</p>		<p><b>XX MAINTENANCE STATION  PHOTOVOLTAIC SYSTEM</b></p> <p><b>SINGLE LINE DIAGRAM</b></p> <p>REVISION: [ ]</p>	

# Typical Contract Plans



**CALIFORNIA STATE FIRE MARSHAL**  
**APPROVED**  
 Approval of this document indicates that the electrical installation complies with the California Electrical Code (CEC) and the California Fire Marshal's guidelines for solar PV installation. This approval is valid only for the project and location specified on this document and is not transferable to other projects or locations.  
 DATE: 02/02/22

DIST.	COUNTY	ROUTE	POST MILE	TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
REGISTERED ELECTRICAL ENGINEER			DATE			
PLANS APPROVAL DATE						
The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electrical copies of this plan sheet.						

- Notes:**
1. 2" MC with DC conductors and equipment grounding conductor to Utility-Interactive System Cabinet. For continuation, see sheet EE-4.

- General notes:**
- Provide and install approved conduit support on top of the roof to support conduit system and junction boxes. Conduit support shall be one-piece and non-metallic type. For conduit support details, see detail 1 on sheet EEI-4.
  - All exposed conduits shall be galvanized rigid steel, with minimum size 3/4".
  - Size conduits to allow for 50% future capacity.
  - No DC wiring except at the module connector shall be exposed.
  - Use type CGB connectors at conduit terminations to exposed conductors.
  - DC conduit/conductors between PV modules and PV Array Circuit Combiner Boxes are not shown.
  - Existing Maintenance Building height from ground to the highest edge of the roof is approximately 16'.
  - For graphic symbols and abbreviations, see BPI.
  - For PV rack attachment detail, see detail 2 on EEI-4.
  - Provide and install all necessary warning labels/markings per Article 690 of California Electrical Code (CEC) and the State Fire Marshal's guideline for solar PV installation.
  - Solar PV installation shall comply with the latest guideline from California Department of Forestry & Fire Protection, Office of the State Fire Marshal and latest Program Handbook from California Solar Initiative (CSI).

**PRELIMINARY PLANS**

DESIGN	BY	CHIEF
DETAILS	BY	CHIEF
QUANTITIES	BY	CHIEF

**STATE OF CALIFORNIA**  
 DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES  
 ELECTRICAL-MECHANICAL-WATER  
 AND  
 WASTEWATER DESIGN

ROUTE NO.  
 5045707  
 POST MILE  
 2

**XX MAINTENANCE STATION  
 PHOTOVOLTAIC SYSTEM**  
 ROOF PLAN

SHEET  
 EE-3

DOCS 90 Imperial Rev. 1/07

ORIGINAL SCALE 1/8" = 1'-0"  
 FOR REDUCED PLANS

CU 2  
 EA 2

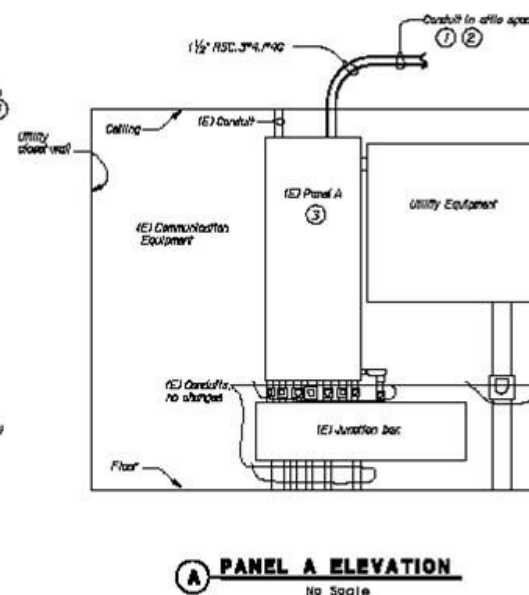
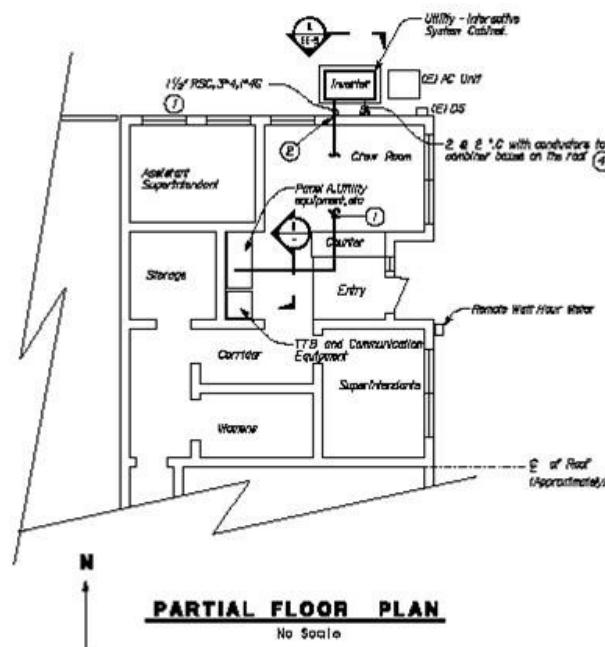
DISTRESSING PRINTS BEARING  
 EARLIER REVISION DATES

REVISION DATES (CHARACTER BY DATE ONLY)

22.2.03



# Typical Contract Plans



DIST.	COUNTY	ROUTE	POST MILE	SECTION	SHEET NO.	TOTAL SHEETS

REGISTERED ELECTRICAL ENGINEER DATE

PLANS APPROVAL DATE

The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.

- Notes:
- Conduit shall be concealed in the attic, through the wall and down to the inverter.
  - Seal around the conduit hole with silicon sealant where it exits the building.
  - Existing Panel is a 120/208 Volt, 3 phase, 4 wire, ITE manufacturer, type GDF panelboard, install 3 pole, 80 ampere built-in connection type circuit breaker in Panel space 17/18, 2L. Connect 4 conductors from the inverter to the circuit breaker and ground bus as required for operation.
  - For continuation see Sheet EE-3.

**PRELIMINARY PLANS**

DESIGN	BY	DATE
CHECKED	BY	DATE
QUANTITIES	BY	DATE

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES  
ELECTRICAL-MECHANICAL-WATER  
WASTEWATER DESIGN

PROJECT NO.  
2

XX MAINTENANCE STATION  
PHOTOVOLTAIC SYSTEM  
PARTIAL FLOOR PLAN AND ELEVATION

SHEET  
EE-4

DOCS 90 Imperial Rev. 1/07

ORIGINAL SCALE 1/8" = 1'-0"  
FOR REDUCED PLANS

CU 2  
EA 2

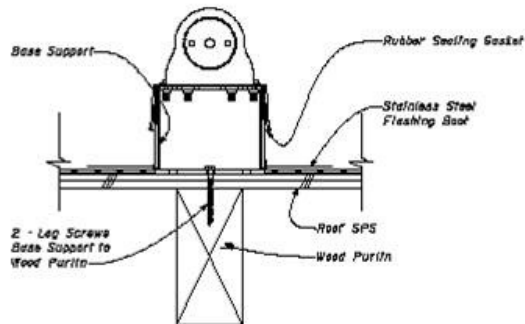
DISSEMINATION POINTS BEARING  
EARLIER REVISION DATES

REVISION DATES (ELECTRONIC COPY ONLY)

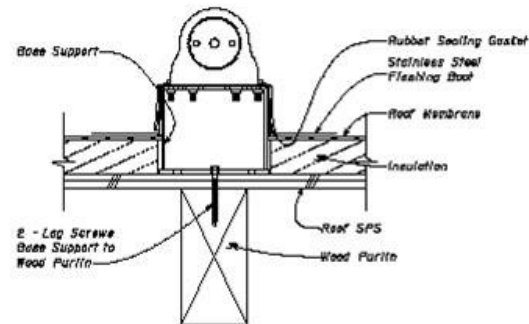
SHEET OF

21.1.07

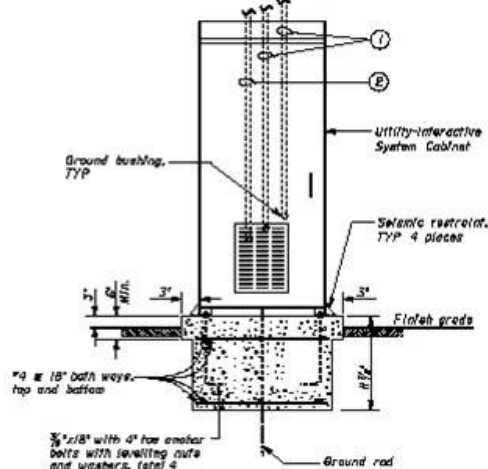
# Typical Contract Plans



**2 WOOD - NO INSULATION**  
No Scale

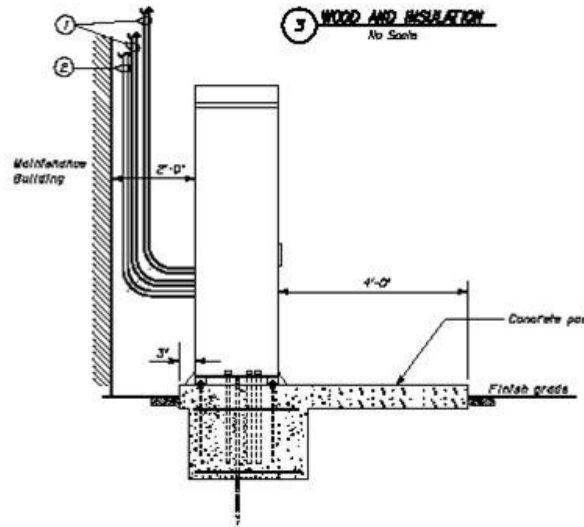


**3 WOOD AND INSULATION**  
No Scale



**FRONT VIEW**

**A ELEVATION**  
NO SCALE



**SIDE VIEW**

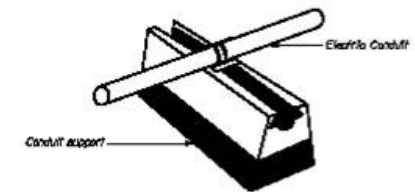
**RESPONSIBLE ENGINEER FOR DESIGN**  
APPROVED  
I warrant that this plan does not violate any applicable laws, codes, or regulations, and that I am a duly licensed professional engineer in the State of California.  
Signed by: \_\_\_\_\_  
Date: 10/10/10

DIST.	COUNTY	ROUTE	PROJECT NO.	SHEET NO.	TOTAL SHEETS

REGISTERED ELECTRICAL ENGINEER DATE \_\_\_\_\_  
 IN USE APPROVAL DATE \_\_\_\_\_  
 The State of California or its officers or agents shall be responsible for the accuracy or incompleteness of electronic copies of this plan sheet.

## Notes

- 2" O. MC with DD conductors and equipment grounding conductor to PV Array combiner boxes on the roof. For continuation, see sheet EE-3.
- 1 1/2" O. 3" x 4" (4" x 6" to 4") Panel A hole drilling space. For continuation, see sheet EE-4.



**1 ROOF EXPOSED CONDUIT SUPPORT**  
NO SCALE

**PRELIMINARY PLANS**

DESIGN	BY	CHIEF
DETAILS	BY	CHIEF
QUANTITY	BY	CHIEF

**STATE OF CALIFORNIA**  
DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES  
ELECTRICAL-MECHANICAL-WATER  
AND  
WASTEWATER DESIGN

PROJECT NO.  
5545707  
2

**XX MAINTENANCE STATION  
PHOTOVOLTAIC SYSTEM  
ELEVATION AND DETAILS**

SHEET  
EE-5

DOCS 90 Imperial Rev. V/07

ORIGINAL SCALE 1/4" = 1'-0"  
FOR REDUCED PLANS

CU 2  
EA 2

DRAWING PRINTS BEARING  
EARLIER REVISION DATES

REVISION DATES (ELECTRONIC COPY ONLY)

SHEET OF



# Project Summary

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## State Fire Marshal Requirements

- **PV System Guidelines**
- **CREB Projects Will Conform**
- **Approved Exceptions on Plans**

# Project Summary

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CALIFORNIA DEPARTMENT of FORESTRY  
and FIRE PROTECTION  
OFFICE OF THE STATE FIRE MARSHAL



SOLAR PHOTOVOLTAIC  
INSTALLATION GUIDELINE  
(In partnership with interested local fire officials, building officials,  
and industry representatives)

April 22, 2008

[www.osfm.fire.ca.gov/pdf/reports/solarphotovoltaicguideline.pdf](http://www.osfm.fire.ca.gov/pdf/reports/solarphotovoltaicguideline.pdf)

# Project Summary

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## Submittal Requirements

- **Delayed Start**
- **Electrical and Civil P.E. stamps**
- **Electronic Submittals and Approvals**
- **Equipment Approval**

# Project Summary

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## Material Requirements

- Buy America is N/A
- Materials on Hand  
Caltrans Std Spec 9-1.07C



# Project Summary

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## Access Requirements

- Temporary Storage
- **Caltrans Std Spec 4-1.02**
- Utility Trench Backfill
- Trenching

# Project Summary

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## Inspection Requirements

- **Pre-job Conference**
- **Benchmark Inspections**
- **State Fire Marshal Inspection**
- **Final Inspection(s)**



# Project Summary

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## Invoicing Requirements

- **Per Site, Not Project**
- **Detailed / Itemized Invoice**
- **Submitted in Triplicate**
- **Additional Approvals**
- **Reference to the Department of Transportation, Contract Number, and Site**

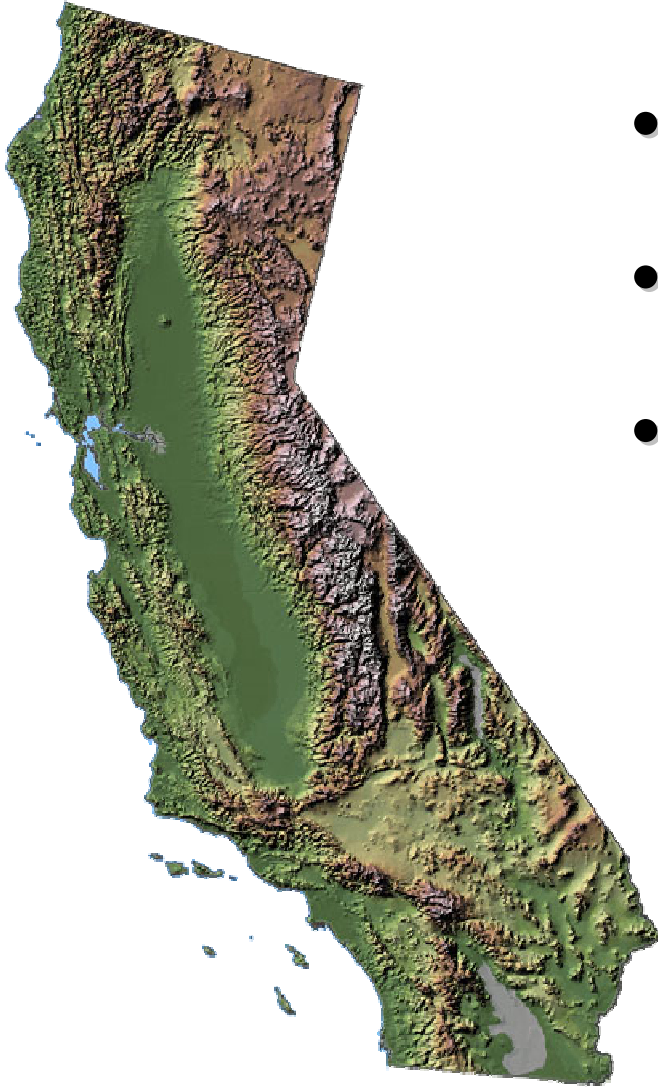


# **Project Specifications**

**Blair Anderson, P.E.**

# Project Specifications

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- **Special Provisions**
- **Standard Specifications**
- **Amendments to Standard Specifications**

# Project Specifications

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- Most of the work consists of **Building Work (Section 12)** of the **Special Provisions**
- **Sections 10 through 95** of the **Standard Specifications do not apply to the work in Section 12** except when specific reference is made thereto.

# Project Specifications

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- **Runoff and control any water shall conform to the requirements of the **Storm Water Pollution Prevention Program (SWPPP)** and **Water Pollution Control Program (WPCP)****

# Project Specifications

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## Hierarchy of Documents, Section 5-1.04

1. Project Special Provisions
2. Project Plans
3. Standard Plans
4. Standard Specifications  
(Including Amendments)





# Project Specifications

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## Hierarchy of Documents, Section 5-1.04

### **5-1.04 Coordination and Interpretation of Plans, Standard Specifications, and Special Provisions**

- These Standard Specifications, the Standard Plans, project plans, special provisions, contract change orders and all supplementary documents are essential parts of the contract, and a requirement occurring in one is as binding as though occurring in all. They are intended to be complementary, and to describe and provide for a complete work.
- Project plans shall govern over Standard Plans; Standard Plans and project plans shall govern over these Standard Specifications; and the special provisions shall govern over both these Standard Specifications and the plans.
- Should it appear that the work to be done or any of the matters relative thereto are not sufficiently detailed or explained in these specifications, the special provisions or the plans, the Contractor shall apply to the Engineer for such further explanations as may be necessary and shall conform to them as part of the contract. In the event of any doubt or question arising respecting the true meaning of these specifications, the special provisions or the plans, reference shall be made to the Engineer, whose decision thereon shall be final.
- In the event of any discrepancy between any drawing and the figures written thereon, the figures shall be taken as correct. Detail drawings shall prevail over general drawings.



# Contracts **Over** \$147,000

**Kris Kuhl, P.E.**

# Advertising and Bid Opening

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## **Contracts advertised at:**

[http://www.dot.ca.gov/hq/esc/oe/weekly\\_ads/index.php](http://www.dot.ca.gov/hq/esc/oe/weekly_ads/index.php)

## **Bidder inquiries:**

[www.dot.ca.gov/hq/esc/oe/project\\_status/bid\\_inq.html](http://www.dot.ca.gov/hq/esc/oe/project_status/bid_inq.html)

## **Order bid documents:**

[http://www.dot.ca.gov/hq/esc/oe/weekly\\_ads/bid\\_documents\\_via\\_fax.pdf](http://www.dot.ca.gov/hq/esc/oe/weekly_ads/bid_documents_via_fax.pdf)

# Construction Contracting with Caltrans – How to Submit a Responsive Bid

**Updated August 2009**



**ADA Notice** For individuals with sensory disabilities, this document is available in alternate formats. For information call (916) 654-6410 or TDD (916) 654-3880 or write Records and Forms Management, 1120 N Street, MS-69, Sacramento, CA 95814.

# **Advertising and Bid Opening**

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## **How to Submit Responsive Bids**



- **Complete all bid items**
- **Sign the bid**
- **Provide bid bond or cashier's check for 10% of bid with the bid**
- **Possess appropriate contractor's license at time of bid**



# Advertising and Bid Opening

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## Bid Openings are Public

- Time & Place in “Notice to Bidders”.
- Teleconference #: 1-203-875-7893, participant code 974188#
- Bid Results: Call (916) 654-5500 after 5 pm on bid day



# **Contract Award & Approval**

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## **Contract Award Process**

- **Bids verified & reviewed for responsiveness**
- **Small Business Preference applied- 5% up to \$50,000**
- **DVBE incentive – 1% to 5% up to \$100,000**
- **Final contract financing approved based on low responsive bid**



# Contract Award & Approval

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## Contract Award Process

- Bids exceeding per site limits will be rejected
- Bid protests or other issues could delay award
- Award process normally takes 3-4 weeks from bid opening



# Contract Award & Approval

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## Contract Approval Process



- Contractor receives contracts for execution 1 day after award
- Return executed contracts with payment and performance bonds **within 10 business days**

# **Contract Award & Approval**

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## **Contract Approval Process**

- **Include insurance documents**
- **If bonds and insurance are OK, contract is approved by Caltrans**





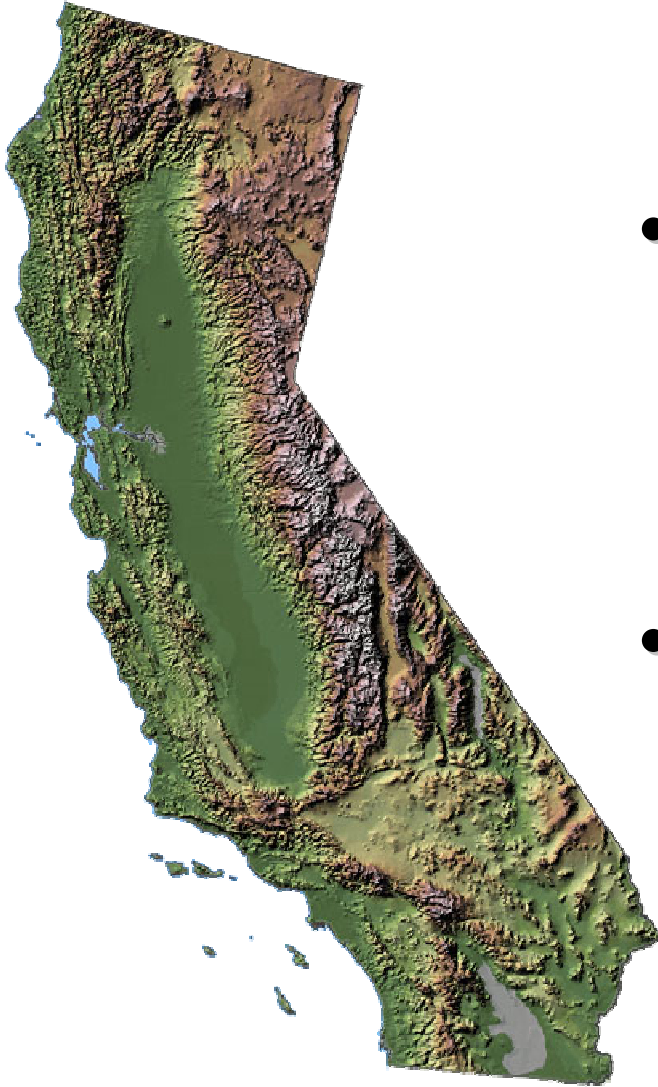
# Contracts **Under** \$147,000

**Lindy Wilson**



# Contracts **Under \$147,000**

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- **Solicitation for Bid will be sent to Certified Small Business Contractors**  
(Government Code 14838.7)
- **Bids from at Least 2 Certified SB, or 2 DVBE Firms**

# Contracts **Under \$147,000**

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**Bidder inquiries may be sent via  
e-mail to:**

**Department of Transportation  
Bidder Inquiries  
[Structure\\_Specs@dot.ca.gov](mailto:Structure_Specs@dot.ca.gov)**

# Contracts **Under** \$147,000

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## How to Submit Responsive Bids



- Complete all Bid Items and/or Projects According to Bid Sheet
- Signature on Bid Sheet
- Provide Bid Bond or Cashier's Check for 10% of Bid **with the bid**

# Contracts **Under \$147,000**

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## How to Submit Responsive Bids



- Possess Appropriate Contractor's License **at Time of Bid**
- Submit Bid on or Before the Bid Due Date
- Bids are Submitted to the Contract Analyst

# Contracts **Under** \$147,000

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## How to Submit Responsive Bids



- Bids are **NOT** Accepted by fax
- Must be Certified Small Business at time of Bid Due Date and Time

# Contracts **Under** \$147,000

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**Bid Openings are **Not**  
Public**

- **Contact the Contract Analyst,  
Tracy Franco, for Bid Results  
at (916) 227-6111**





# Contracts **Under** \$147,000

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## Contract Award Process

- **Bids are Verified and Reviewed for Responsiveness**
- **Final Contract Financing Approved Based on Lowest Responsive Bid**
- **Award Process: 1-2 Weeks**



# Contracts **Under** \$147,000

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## Contract Approval Process



- **Contractor Receives Contract for Signature 1-2 Business Days after Award**
- **Contractor Returns Signed Contract with Payment Bond and Insurance Documents **within 10 days****
- **Contract is Approved and Executed by Caltrans**



# **Insurance Requirements**

**Victor Salazar, P.E.**

# **Insurance Requirements**

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## **General Liability**

- **Section 7-1.12B(4)(b), Liability limits/Additional Insureds of Standard Specs**
- **\$1,000,000 each occurrence**
- **\$2,000,000 aggregate for products/completed operations**
- **\$2,000,000 general aggregate**
- **Umbrella/Excess not required**

# Insurance Requirements

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## THE CREB INSURANCE TABLE

<b>Total Bid</b>	<b>For Each Occurrence<sup>1</sup></b>	<b>Aggregate for Products/ Completed Operation</b>	<b>General Aggregate<sup>2</sup></b>	<b>Umbrella or excess liability</b>
Any amount	\$1,000,000	\$2,000,000	\$2,000,000	None
<p>1. Combined single limit for bodily injury and property damage.</p> <p>2. This limit shall apply separately to the Contractor's work under this contract.</p>				

# Insurance Requirements

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- **Automobile insurance**
  - **\$1,000,000 each occurrence.**
  - **No umbrella or excess policy**
- **Workers' Compensation and employer's liability insurance (per statute and **Section 7-1.12B(3)** of the Standard Specifications**



# Insurance Document Checklist

**Contract No:** \_\_\_\_\_ **Contractor:** \_\_\_\_\_

Checklist Documents Table

INSURANCE POLICY OR ACCORD DESCRIPTION	BINDER? YES/NO	POLICY / BINDER NUMBER.	POLICY /BINDER PERIOD	
			From	To
Commercial General Liability (CGL) Policy				
Excess (or Umbrella) Policy	N/A	N/A	N/A	N/A
Auto Insurance Accord Certificate of Liability—		<i>Accord certificate O.K.</i>		
Certificate of Insurance—Workers' Compensation		<i>Accord form or State Fund certificate O.K.</i>		
Certificate of Insurance—U.S. Longshoreman's and Harbor Workers' Compensation Act (if applicable, e.g., if over water)		<i>Accord or binder O.K.; or State Fund certificate.</i>		
Certificate of Insurance—Jones Act (if applicable)		<i>Accord or binder O.K.</i>		
Railroad Protective Insurance or other Coverage Required by Special Provisions (if applicable)				

# Insurance Document Checklist

Contract No: \_\_\_\_\_ Contractor: \_\_\_\_\_

## Items to Check for in Each Document

1. CGL Policy (*Submit actual policy and accord form*).
  - *Name of Insurer*
  - *Policy Number*
  - *Policy Period Name of Insureds [This should match the Contractor's name]*
  - *Additional Insured Endorsement (should specify State of California, Department of Transportation or state something to the effect "as required by contract")*
  - *Policy Limits (amount is based upon Section 7-1.12B(4)(b) of the "Amendments to Standard Specifications," found in Section 1 of the contract special provisions).*
  - *Declarations Page*
  - *Self-Insurance Endorsement (if applicable)*
  - *CGL Policy Language (about 13 pages if using the standard ISO forms)*

# Insurance Document Checklist

Contract No: \_\_\_\_\_ Contractor: \_\_\_\_\_

## 2. *Self-Insured Retention (SIR) (based upon a Self-Insurance Endorsement)*

- *Notice of Election to Self-Insure*
- *Notification to Which Self-Insurance Applies*
- *Amount of Self-Insurance*
- *Declaration by CPA under Penalty of Perjury of Sufficient Funds/Resources to Cover SIR of \$50,000 or higher.*

## 3. *Certificate of Insurance - Auto Liability (Accord form O.K. if items below are addressed).*

- *Name of Insurer*
- *Policy Number*
- *Policy Period*
- *Policy Coverage (must show coverage for all owned, hired and non-owned automobiles)*
- *Name of Insureds [This should match the Contractor's name]*
- *Policy Limits (amount is based upon Section 7-1.12B(5) of the Standard Specifications*

# Insurance Document Checklist

Contract No: \_\_\_\_\_ Contractor: \_\_\_\_\_

4. *Certificate of Insurance—Workers' Compensation* (**Accord form O.K. if items below are addressed, and if with State Fund, must submit State Fund issued certificate of insurance.**

- *Name of Insurer*
- *Policy Number*
- *Policy Period*
- *Name of Insureds [This should match the Contractor's name]*
- *Policy Limits (amount is based upon Section 7-1.12B(5) of the Standard Specifications*

# Insurance Document Checklist

Contract No: \_\_\_\_\_ Contractor: \_\_\_\_\_

5. *A. M. Best financial strength rating meeting requirements of Section 7-1.12B(2), "Casualty Insurance," of the Standard specifications. . Provide information required in special provisions and on an accord form addressing items below).*
- Insurer is an A.M. Best rated A- or better. (A.M. Best rating and financial strength category can be found at:  
**<http://www3.ambest.com>**) of Insurer*
  - Insurer's A.M. Best Financial Size Category is VII or better. (Double click on company name to view its A.M. Best Financial Size Category).*

FOR ITEMS 1-5, A BINDER MAY BE ACCEPTED IN-LIEU OF AN INSURANCE POLICY.



# **How to do Business with Caltrans**

**Ann Blazina**



# How to do Business with Caltrans

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**Small Business Certification**

[www.pd.dgs.ca.gov/smbus/default.htm](http://www.pd.dgs.ca.gov/smbus/default.htm)

# Summary

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- **Project Summary**
- **Project Specification**
- **Contracts Over \$147,000**
- **Contracts Under \$147,000**
- **Insurance Requirements**
- **How to do Business with Caltrans**

# Questions

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[www.dot.ca.gov/hq/esc/sdsee/creb/](http://www.dot.ca.gov/hq/esc/sdsee/creb/)